

by Michael Amaral and
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One Zoo, Two Islands, and a Beetle



Photo by Andrea Kozol

The spectacle of nature is always new, for she is always renewing the specters. Life is her most exquisite invention, and death is her expert contrivance to get plenty of it.

—Goethe

In the decade since the American burying beetle (*Nicrophorus americanus*) was added to the endangered species list, an impressive number and variety of cooperators have stepped forward to participate in the recovery of this unusual species. What's the attraction? After all, this creature, which makes a living on the dead and decaying flesh of vertebrate animals, is not typically thought of as a charismatic species.

Why the American burying beetle disappeared from more than 90 percent of its historic range is another question. The answer is not clear. Biologists do know that, compared to other members of the genus *Nicrophorus*, the American burying beetle requires the largest vertebrate carcass (e.g., an animal the size of a mourning dove) for successful reproduction. The beetles fly about at night seeking odors that indicate a recently deceased animal. If it is the right size (2.8 to 7 ounces, or 80 to 200 grams), the beetles pair up and bury the carcass, preserving it with special secretions, and the female lays her eggs in the brood chamber. The carcass becomes food for the larvae. Biologists suspect that the American burying beetle's decline may be due to a decreasing availability of suitable carrion and increasing competition for carcasses by other species.

In the eastern United States, reestablishing populations of American burying beetles in selected areas of their historic range is essential for the species'

recovery. In addition, any recovery effort requiring reintroduction must have support from cooperators as well as a continuous source of animals for release. Block Island, 12 miles (19 kilometers) off the southern coast of Rhode Island, is the only remaining natural occurrence of the American burying beetle east of the Mississippi River. But before Block Island beetles could be used in a reintroduction effort, biologists had to be certain that removing some of the beetles for captive propagation would not endanger the island's population.

To address this need, U.S. Fish and Wildlife Service (FWS) biologists joined the Rhode Island Division of Fish and Wildlife, The Nature Conservancy, Boston University, and private landowners in establishing a population monitoring protocol for the American burying beetle on Block Island. With monitoring in place, the FWS and several cooperators moved forward with an ambitious plan to restore the American burying beetle to Nantucket Island, one of the last historic localities for the species in Massachusetts.

A key player in the Nantucket reintroduction effort is the Roger Williams Park Zoo, located in Providence, Rhode Island. The zoo joined the American burying beetle recovery effort in 1994 and began rearing beetles from larvae taken on Block Island. Using nominal start-up financial support from the FWS, the zoo provides space

and care for the captive breeding colony throughout the year. Zoo staff are able to bring their animal husbandry expertise to the beetle project. In turn, staff members gain valuable experience in field research techniques and release methods that can be applied to other conservation endeavors. In the past 5 years, the Zoo has successfully reared more than 20 generations of beetles. With the Massachusetts Division of Fisheries and Wildlife and a private cooperating land owner, the Massachusetts Audubon Society, the FWS has reintroduced more than 350 American burying beetles raised at the Providence Zoo to Nantucket Island, a place famous for its colonial whaling history and popular as a summer beach vacation destination.

To stimulate the beetles to breed, zookeepers painstakingly provide pairs of beetles with all the necessary ingredients and their own honeymoon suite. This entails preparing individual buckets with compact soil, a fresh quail carcass, the right temperature, and a bit of matchmaking. If all goes well, larvae will hatch after a few days and be tended by their parents. The young larvae cannot eat on their own and will solicit feeding from the adults by stroking their parents mandibles. When the larvae are 12-15 days old, they tunnel farther into the ground where they enter a pupal stage for about 6 to 8 weeks. After the pupal stage is complete, they emerge above ground as shiny red and black adult beetles.

The popular conception of conservation biology evokes an image of a lone biologist working in a distant land, such as a tropical rain forest. The Roger Williams Park Zoo understands that there are also many projects that need our attention and support in our own backyard. From the zoo's perspective, the beetle project is an excellent way to contribute to the conservation of a local endangered species.

In December 1998, the American burying beetle became a celebrity insect. The beetle and the FWS recovery

work were featured in a "Wild Discovery" television program, entitled "Weird Worlds." Many of the close-up shots of the beetles tending their larvae were obtained by the Powderhouse Productions film crew at the Roger Williams Park Zoo.

The partnership between the FWS and the zoo can serve as a model for other institutions to collaborate on conservation efforts like the American burying beetle. With our State, private conservation agency, and zoo cooperators, FWS biologists are hopeful that these efforts (and similar ones in other parts of the country) will restore the American burying beetle as the ultimate vertebrate recycler in the insect world.

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Ming Lee Prospero checks brood of American burying beetles

Photo above and below by Grant West/Roger Williams Park Zoo

